Course: **A Practical Course in Air Conditioning and Maintenance**

Guided Learning Hours: **24**

Pre-requisite: **Basic Science**

Abstract

This unit provides learners with the necessary training for entry level positions as service and maintenance technicians in the field of air conditioning and refrigeration. Upon successful completion of the course learners should have the necessary skills to enter the field of refrigeration and air conditioning. This training course is intended for persons wishing to improve their knowledge and skills in refrigeration engineering. Learning will take place through a combination of lectures and laboratory sessions.

Target Audience

The course in intended for students, end users, consultants, engineers, technicians, architects, contractors and HVAC designers

Learning outcomes

On completion of this course, learners will be able to:

1. Understand Occupational Safety and Health guidelines, communicate using appropriate mannerism and trade terms.
2. Understand the Refrigeration Cycle and the functions of major component.
3. Understand how to read P-H diagrams and to size and select air condition units for various applications.
4. Understand Flaring Swaging and Soldering.

5. Understand the safety requirements during installation and servicing of air conditioning systems and be able to troubleshoot and carryout maintenance of the air condition system.

Assessment Criteria

In order to achieve Learning Outcome…	The Learner must…
1. Understand Occupational Safety and Health guidelines, communicate using appropriate mannerism and trade terms.	1.1 Explain the safety measures taken when using refrigerant. 1.2 Explain PPE, the use of Material Safety Data Sheet (MSDS) 1.3 Describe electrical, fire hazards, classes.
2. Understand the Refrigeration Cycle and the functions of major components.	2.1 Describe the Refrigeration system using a line diagram 2.2 Separate the Refrigeration system into the high side and low side. 2.3 Explain the Functions of the major components. (Evaporator, Condenser, Condenser, Metering Device, Filter Drier) 2.4 Explain Superheat and Sub Cooling.
3. Understand how to read P-H diagrams and to size and select air condition units for various applications.	3.1 Explain how to read P-H and P-T chart. 3.2 Explain how to size and select air conditioning unit for various applications.
4. Understand Flaring, Swaging, Soldering	4.1 Explain the difference between Soldering and Brazing 4.2 Demonstrate Flaring and Swaging 4.3 Demonstrate how to pressure test for leaks
5. Understand the safety requirements during installation and servicing of air conditioning systems and be able to troubleshoot and carryout maintenance of the air condition system.	5.1 Develop a Maintenance Schedule for Air Conditioning Systems. 5.2 Be able to properly troubleshoot air condition systems to identify possible causes of failure before they occur.

Essential Learning Resources:

Learners will need access to a wide range of publications relating to Air Conditioning systems and a suitably equipped laboratory for practical training. Various manufacturer products specifications and reference data would also be beneficial to learners.

Textbooks and Manuals

1. Air Conditioning student manual

Websites

Ashrae.org